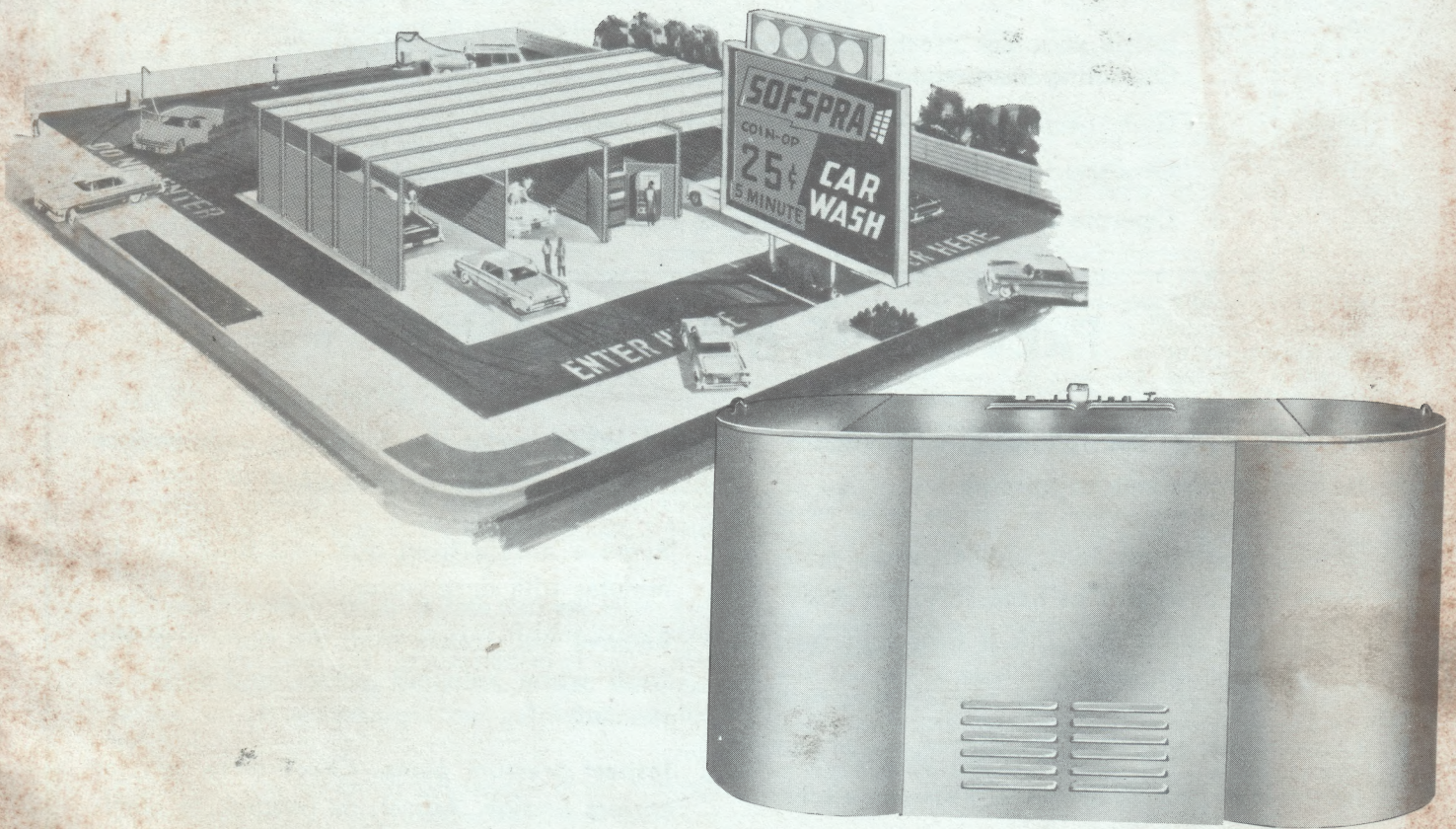




COIN-OP CAR WASH

504-2000 SERIES



INSTALLATION AND OPERATING MANUAL



ALD, INC.

HOME OFFICE:

7045 North Western Ave., Chicago 45, Ill.

OFFICES IN PRINCIPAL CITIES

ALD CANADA, LTD.

Rexdale (Toronto), Ontario, Canada

INSTALLATION AND PREVENTIVE MAINTENANCE

Your Sofspra Car Wash is a quality piece of car wash equipment designed to give years of trouble free service. To assure this trouble free service, it is necessary that the machine be installed correctly and that it receive normal attention and preventive maintenance.

We recommend the following:

INSTALLATION AND OPERATION

1. Install your Car Wash according to instructions. See Installation and Operating Instructions on pages 3 and 4
2. Give special attention to the electrical connections.
3. Give special attention to the plumbing and hose connections.
4. Operate your Car Wash according to instructions.

PREVENTIVE MAINTENANCE

EVERY DAY make the following maintenance checks and adjustments as needed:

1. Check concentrate tank liquid level. Add water and detergent as necessary. Stir daily to maintain good mix. This is especially important in cold weather.
2. Check wash tank liquid level. Correct improper level by adjustment of pressure switch.
3. Clean gun tip with a match or tooth pick. Daily for the first week, weekly thereafter.
4. Check pressure relief valve while gun is being used.

EVERY WEEK make the following maintenance checks and adjustments as needed:

1. Remove nozzle from gun and flush for 10 minutes with rinse water.
2. Remove the screens from the bottom of the fresh water solenoid valves and clean as needed.
3. Inspect pressure pump. Check drive belt for correct tension. Adjust, as needed, to eliminate belt slippage on motor pulley.
4. Check operation of detergent transfer pump. Adjust, if needed.
5. Lubricate pump bearings every 200 hours of running time. CAUTION: **Do Not** overgrease.

**PREVENTIVE MAINTENANCE WILL
REDUCE BREAKDOWNS, LOST TIME,
AND EXPENSIVE REPAIR BILLS**

INSTALLATION INSTRUCTIONS

MODELS 504-2000, 504-2001, 504-2002, 504-2003

CAR WASH

TANK & PUMP UNIT LOCATION

The Model 504 Car Wash unit is designed for an inside, out of the weather, installation. The usual method of installation is to put the unit, consisting of the tanks, pressure pumps and controls, in a small room or enclosure located between 2 or more wash stalls. The room should be large enough to accommodate the unit along with water softening and water heating equipment. There should also be some space for storage of soap, towels, etc.

The tank and pump unit should be positioned so that motors, pumps and controls are accessible for normal maintenance and service and adjusting when needed. There should be adequate space between the back of the unit and the wall — a minimum of 24" is recommended. See attached drawing covering the location of hot and cold water connections, gun and electrical control cable connections and electrical service connections.

WATER CONNECTION:

1. Facing unit, connect the cold water line to the right hand connection (nearest the cold water manual valve). Connect the hot water line to the left hand connection. See page 3. On the 4 stall unit, 2 cold water connections are necessary.

The unit requires a supply of both cold soft water and hot soft water. The temperature of the hot water supply should be from 110° to a maximum of 120°. The hot water heater will be required to supply hot water at the rate of approximately two gallons per minute per stall.

CAUTION: Do not set the temperature of the external water heater above 120°, as under continuous operation it is possible for the soap tank temperature to raise to a point where it will be quite hot. This temperature increase will cause the hose and gun to become hot and the gun will be uncomfortable to hold. If a central hot water supply is used be sure to install a tempering valve which will hold the temperature of the water entering unit to a maximum of 120°.

The soap tank is equipped with a 1,500 watt heating element which is used to maintain the correct tank temperature. After the installation has been completed the thermostat on the heating element should be adjusted so as to maintain a soap tank temperature of 110° to 120°. Do not exceed the 120° maximum temperature.

NOTE: All plumbing and water supply connections must be according to local code. *Be sure to flush all water lines before connecting to unit.*

ELECTRICAL CONNECTIONS

1. Position and install the coin meter boxes in their proper location in respect to the wash stalls. Run the conduit and control wires from the meter boxes to the right hand outlet box on the unit panel. Connect the wires from the meter panels so that panel #1 will control stall #1, panel #2 will control stall #2, etc. See wiring diagram for color coding of the different meter panels and the corresponding connections at the unit.
2. Run the conduit and control cables from the gun socket on the wall of each stall to the left hand outlet box on the unit panel. Connect the gun control wires observing the color codes given in the wiring diagram.
3. Run electrical service from junction box to the conduit box on the control panel. **NOTE:** Service must be protected with Slo-Blow circuit breakers or fuses. Two stall unit — use 25 amp. Four stall unit — use 45 amp. Connecting cables to be no smaller than No. 10 for the two stall unit and No. 8 for the four stall unit. **CAUTION:** On the 4 stall unit the interconnecting 230 Volt leads *must* be kept in phase — Red to Red and Black to Black.

On some models separate circuits are provided for each pump motor and for the heating element in the soap tank. This model will require a 15 amp service protected with a 15 amp Slo-Blow circuit breaker or fuse for each motor and also for the heating element.

All electrical wiring and outlets must be in accordance with standard practice and local electrical codes. Be sure the service supplied matches the electrical specifications of the unit, otherwise, damage can be done to the motor and the controls. A common ground wire must be run from the junction box to the conduit box or frame of the unit. **NOTE:** *Do Not* turn on electrical current to the unit yet.

GUN-HOSE & BOOM ASSEMBLY

Connect gun hose to the ¾" supply pipe from the pump unit. Care must be taken to be sure all pipe fittings are tight and do not leak. A small leak at any one joint or connection will seriously effect the gun pressure and result in a poor wash job. Connect the gun control cable to the outlet provided near the hose connection. On ceiling mount 360° booms, be sure boom mounting plate is firmly attached to ceiling of stall. Also check boom swivel mounting to the plate. Be sure all mounting bolts, hose connections and control cable connections are tightened firmly. See Figs. "O," "P" and "Q" for detailed information on swivel boom assembly.

WALL MOUNT BOOM:

Attach mounting brackets to side of stall at sufficient height to assure adequate clearance between the boom, the hose and the car top.

Stalls #1 and #2 — 2 Stall or 4 Stall unit

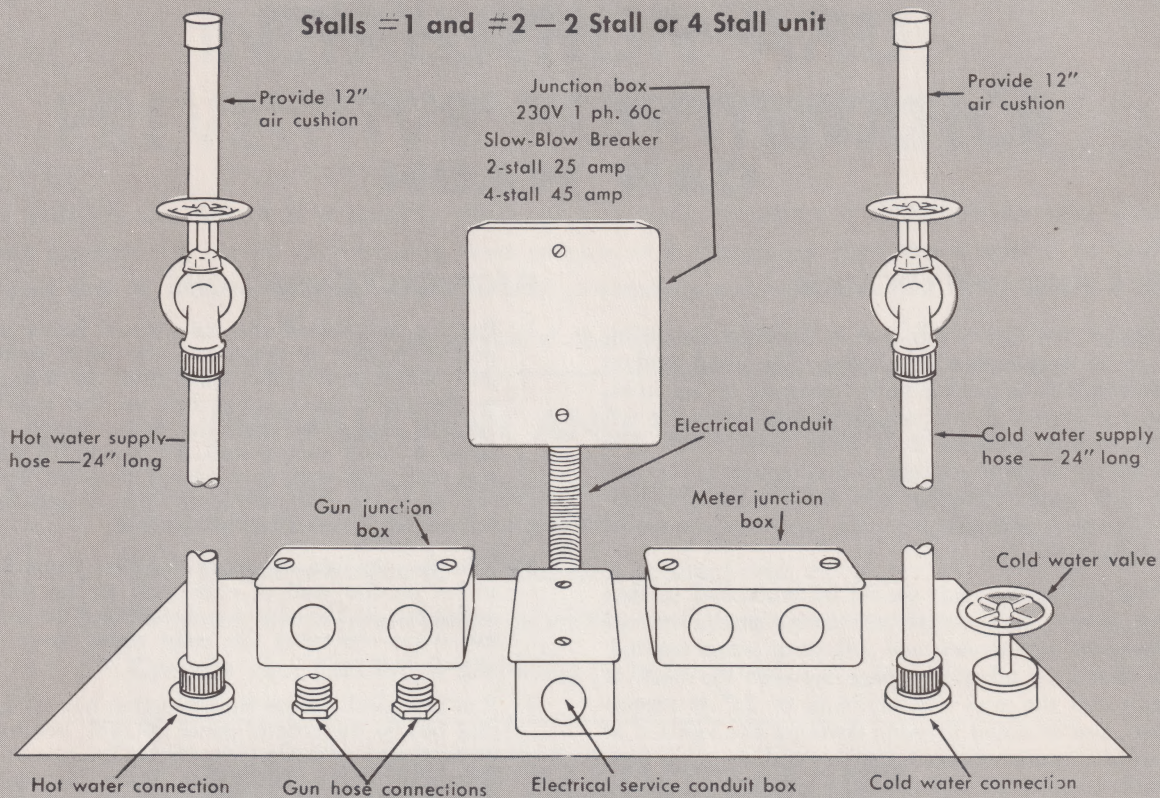


Fig. A

Front of Car Wash

Water connections and junction box
to be mounted on wall.

Stalls #3 and #4 of 4 Stall Unit

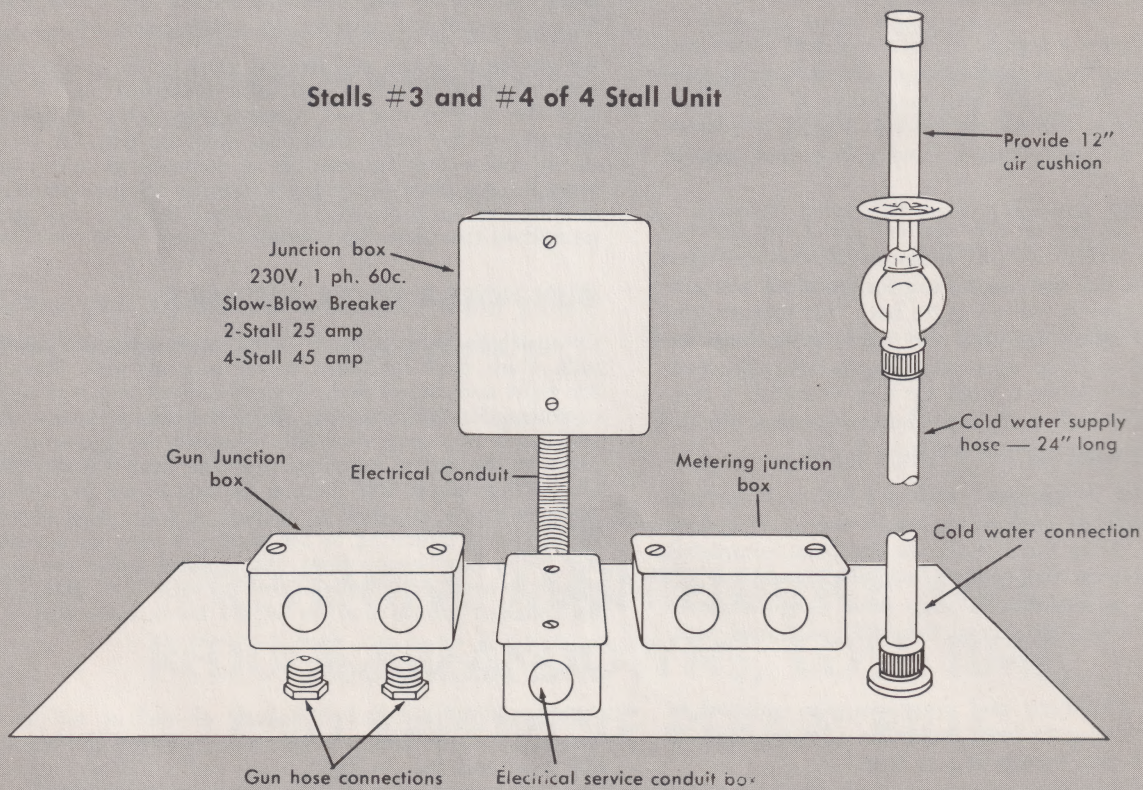


Fig. B

Front of Car Wash

The hose and control cable from the bottom of the boom to the wall connections should be looped in such a manner to allow complete freedom of movement of the boom without any undue twisting or strain on the hose or cable.

TWO PIECE BOOM (FIRST SERIES)

This style boom uses a cable and weight system to support the hose and control cable. The hose and cable should be attached to the boom and to the weight cable so that when the hose is pulled out as far as it will go, the weight does not come up into the curved section of the pipe.

DRIVE BELT TENSION

Drive belt tension should be checked and adjusted, if necessary, at the time of installation. The correct adjustment is:

1" DEFLECTION WITH A 12 POUND PULL.
USE AN ACCURATE SCALE MEASURING
TENSION AT A POINT EQUAL DISTANCE
FROM POINT OF BELT CONTACT WITH
PULLEYS.

Failure to maintain the correct belt tension will result in belt slippage, loss of pressure and premature belt failure.

CAUTION: When replacing a drive belt always use the "Cog" type belt. It is an A-58 Belt and is identified as part number 504-8230.

OPERATING INSTRUCTIONS

The following is a step by step procedure covering the mixing of the soap concentrate, the filling of the concentrate and the soap tanks and adjustments to be made prior to putting the system in operation:

1. Be sure electrical current to the unit is turned off.
2. Mix in separate container, $\frac{1}{2}$ lb. of soap per gallon of hot water. Stir thoroughly until the soap is completely dissolved and then pour into the concentrate tank — tank capacity is approximately 88 gallons filled to within 4" of top. This will require approximately 44 lbs. of soap. NOTE: Amount of soap required per gallon of water may vary, depending on local conditions and the softness of the water being used.
3. Turn on electrical current at junction box. The soap tank — left side — should start to fill. At this time, the small transfer pump, located on the bottom shelf, will also start.
4. Adjust the small brass metering valve, which is located in the center of the shelf, between the 2 pumps, and directly below the rinse solenoid valves. This metering valve is connected to the output of the transfer pump and must be adjusted so that it will feed 7.3 oz. of soap concentrate into the tank to each 1" rise in the water level. NOTE: By placing a yardstick vertically in the tank this adjustment of 7.3 oz. of soap concentrate to each 1" rise, can easily be made. The adjustment of the metering valve may vary slightly, depending on local conditions.

5. The water fill valve and the transfer pump will shut off automatically when the water level reaches a point approximately 3" to 6" from the top of the tank. This water level is controlled by the fill switch located near the top of the tank. This switch is adjusted so that it will open the fill valve and start the transfer pump, when the water level drops to a point approximately 6" to 8" from the top of the tank. This can be adjusted, if needed, by changing the small adjustment screw in the center of the switch.
6. The high pressure lines and hose must be flushed before operating. This may be accomplished by removing spray nozzles from gun extension tube. Operate each pump for 5 to 10 minutes. Remove screens from bottom of fresh water solenoid valve and clean if needed. Then check each nozzle to be sure it is free of dirt, grease, etc. before reinstalling.
7. The unit is now ready for use. By inserting the correct number and denomination of coins in the meter panel, the unit will be activated. Depress the "Soap" button on the spray gun and the pump will start and in a few seconds a high pressure mixture of soap concentrate and water will spray from the gun nozzle. By depressing the "Rinse" button, the soap concentrate will be cut off and the spray will then be clear water. Depressing the stop button will shut off the pump and the spray action. The coin accumulator will continue to run and will run out the time on the meter, even though the gun is not in use or the pump is not running.
8. The bottom pressure switch on the wash tank (left side) is adjusted to cut off all current to the meter and the pumps before the water level drops below the pump intake connection.
9. The pressure switch on the soap tank is adjusted so that it will cut off all current to the unit, including the coin meter panel. This switch is adjusted to open when the soap concentrate reaches a level of 4" to 6" from the bottom of the tank.

10. TO ADJUST PRESSURE SWITCHES

1. Hold nylon nut and turn adjusting screw clockwise to raise liquid level.
2. Turn adjusting screw counterclockwise to lower liquid level.

The unit is essentially a liquid brush. The high velocity of water or soap being ejected in a flat, fan-type spray scours the surface being cleaned, much as a soft-bristled brush would do. It eliminates the work of hand brush cleaning and does an excellent job in removing grime from automobile finishes and other items, such as gasoline engines, carts, boats, etc.

The unit can be operated for extended periods without refilling with detergents, as it makes use of metering the concentrates with water entering the machine from the water supply tap.

The unit remote control gun affords the operator complete freedom to work at some distance from the machine, as the selecting of soap cleaning solutions or rinse are by push button in the control gun handle. This allows for washing on all types of machinery for extended periods.

VAT ASSEMBLY

1. Check concentrate tank liquid level daily. Add water and detergent as necessary. Stir daily to maintain good mix. This is especially important in cold weather.
2. Check wash tank liquid level. Correct improper level by adjustment of pressure switch.
3. Check operation of detergent transfer pump. Adjust if needed.

USING SPRAY GUN

1. Remove gun from holder using convenient pistol grip.
2. Press red "OFF" button.
3. Insert coin in coin meter.
4. Press black soap button and wet car thoroughly. Hold gun 15" to 18" from surfaces.
5. Go over surfaces again holding nozzle about 8" to 10" from surface. For stubborn spots or white side wall tire, hold nozzle from 1 to 2 inches from surface. Move nozzle slowly.
6. When car is clean, press rinse button and rinse car thoroughly.
7. Replace gun in holder.

Nozzle tube and tip should be aligned for a level (horizontal) spray pattern when gun is held in a normal position with the hand grip pointing to the floor. When properly adjusted, the force of the spray will tend to balance the weight of the gun assembly, thus requiring much less effort to handle and use.

REPAIR AND MAINTENANCE GUN AND SPRAY TIP PRESSURE

The 504-2000 coin operated CAR WASH is designed to operate with a gun pressure of approximately 450 to 500 P.S.I. When the unit is operating at this pressure the user when holding the spray gun, will feel a pulsation, and when the spray is activated there is also a reverse thrust caused by the high pressure discharge of the gun.

CHECKING PRESSURE AT THE TIP

The degree of pressure at the tip can be determined in several ways. Normal pressure will have a tendency to lift the tip. Very low pressure will be noticeable, visually as well as lack of any lifting of the tip. The pressure is directly proportional to the volume of water passed through the tip. Therefore, a simple and easy way to check, especially on the rinse cycle, would be to check the flow in a one minute period. In one minute, the tip should deliver 1.8 to 1.9 gallons of water. This can be measured in a pail.

Another accurate method is to use a high pressure gauge (0-1000 PSI). When using a gauge it will be necessary to control the pressure pulse by means of a *metering valve arrangement at the gauge fitting.*

If low pressures are suspected or actually determined by use of the gauge, the first thing to check would be the tip.

Check the spray tip on the gun for dirt and/or other foreign materials. Remove the gun tip and then activate the gun to flush out the gun head. Clean the spray tip with a tooth pick or a wooden match. Do not increase the size of the tip opening by drilling or using some metal tool for cleansing. The best way to check the tip is to simply replace the tip with a known good one.

During the soap cycle, the pump actually sucks the soap water solution from the tank. Therefore, a leak at any one of the following points, will reduce the pressure at the tip on the soap cycle only. The degree of pressure drop will depend upon the amount of leakage.

- A. Check valve, plug and threaded fitting.
- B. Soap solenoid, threaded fittings.
- C. Rinse water tee, all threaded fittings including close nipple to rinse valve.
- D. Hose connection, all.
- E. Connection at pump.

Normally, threaded fittings can be tightened by turning clockwise one turn. If necessary, disassemble, clean and use pipe dope for reassembling. A leak in a hose fitting may be the result of insufficient tightening of the clamp. However, it is recommended that the hose fitting be taken apart and reassembled using Permatex on the barb only.

It is important to remember that a suction leak can be present without having a water leak when the equipment is not in use. Therefore, a water leak at any of the above listed joints would positively indicate an air suction leak. The only other indication of a suction leak would be that of lower pressure on the soap cycle.

Check the pressure relief valve. See Fig. "C." This valve is located below the control panel, and connects to the gun hose fitting. It has a copper tube connecting to the valve body and running through a hole into the tank. This tube serves as a drain and allows any water from the relief valve to drain back into the tank. When properly adjusted, and with the gun activated, no water should come out of the valve into the tank. If water is coming out of the relief valve, it indicates the valve setting is too low and as a result the gun pressure is also too low.

PRESSURE RELIEF VALVE Part No. 504-8087

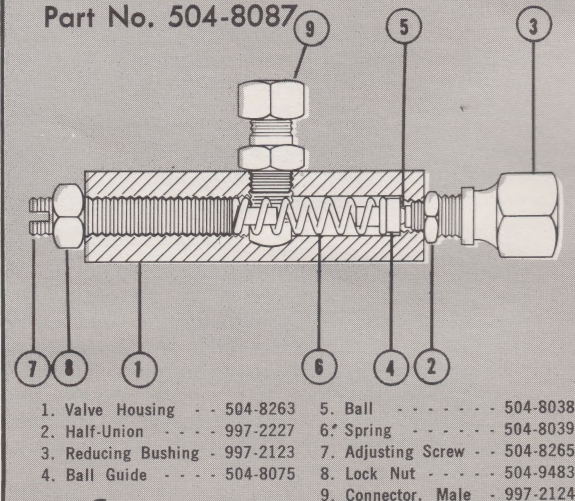


Fig. C

To adjust the pressure relief valve, shut off the unit, loosen the lock nut No. 8 and turn the adjusting screw No. 7, clockwise approximately one turn. This will increase the spring pressure on the ball and valve seat.

Start unit and check for discharge from copper tube.

If there is still a slight discharge from the tube repeat above adjustment until discharge stops. Retighten the lock nut. If there are no other leaks in the system and the pump is operating properly then the gun pressure should be correct.

Check high pressure hose for kinks and wear at gun and hose support points. Repair or replace, if needed.

TRANSFER PUMP DESCRIPTION AND OPERATION

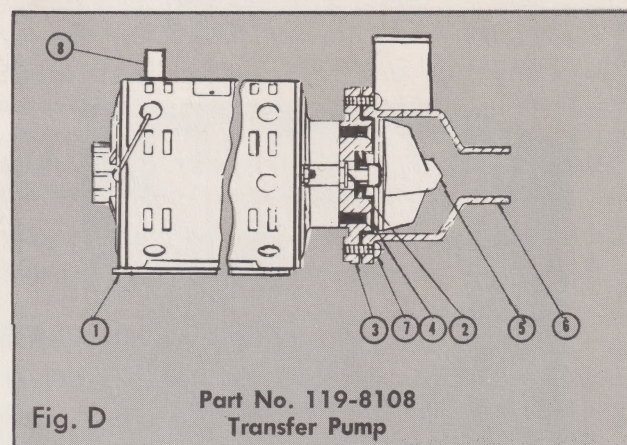
The transfer pump used on this unit is an impeller type which is directly driven by a 1/12 HP motor. The motor is controlled through a starting relay which is mounted on the frame near the motor. To clean the pump, it is only necessary to remove the four screws which hold the pump body to the pump head. This allows cleaning of the impeller and the seal assembly. To remove impeller and seal assembly, insert a screwdriver through one of the openings in the motor end bell and engage it into one of the cooling fins on the motor armature. This allows holding the armature and shaft while the impeller is unscrewed, counterclockwise, from the shaft. Upon removal of the impeller, the diaphragm and seal assembly can then be removed for cleaning or replacement, if necessary. When re-installing the pump body, care must be exercised in tightening the four screws which hold it to the pump head. These screws must be drawn up evenly and tightened just snug enough to give a good water seal around the diaphragm. Over-tightening will result in breakage of the pump body or pump head.

The pump motor is equipped with sealed bearings and no additional lubrication is required.

Item	Description	Part No.
1.	Motor only 208/230V	120-8084
2.	Washer	119-8175
3.	Pump head	119-8176
4.	Pump head screw	998-3185
5.	Impeller and Seal Assembly	120-8076
6.	Pump body	119-8178
7.	Pump body screw	998-3752
8.	Starting relay	119-8179

HIGH PRESSURE PUMP:

1. The high pressure pumps require normal attention and preventive maintenance if they are to operate satisfactorily and deliver the required pressure and volume needed for a good wash job. They should be inspected at least on a weekly basis. The belt should be tight enough to eliminate any possibility of the belt slipping in the motor pulley. It should not be extremely tight as this results in premature failure of the belt and the motor bearings.
2. The pump bearings should be lubricated approximately every 200 hours of operation. Usually one



push on the Zerk gun will give all the lubrication needed. Excessive lubrication can damage the grease seal in the pump bearing assembly.

3. Check the pump for water leaks or seepage around the piston assembly and at the hose connections.

If a leak is indicated tighten connections or replace piston cups if needed. See special instructions on Myers pump service.

4. Note: The various pump parts, with the exception of the cup rubbers, valves and drive belt are covered by a one year warranty. Individual parts will be replaced under warranty if they fail due to a defect within the one year. Complete pumps *will not* be replaced as they can be easily repaired in the field. Cup rubbers, valves and drive belts are furnished in the maintenance kit. They are considered expendable items and will not be replaced under warranty.
5. When servicing the pump care must be taken to re-assemble it properly so as to eliminate any possible leaks around "O" rings or hose connections. The slightest leak either in the high pressure side or the suction line will reduce the efficiency of the pump.
6. Leaks in the suction side will usually result in the pump knocking during the soap period. It will also cause a pressure drop of from 40 to 80 lbs. between the rinse period and the soap period.

NOTE: Complete pumps returned as defective will be handled as a charge repair job and returned to the sender.

HEATING ELEMENT — PART NO. 504-8016

The soap tank is equipped with a 1,500 Watt Chromalox, immersion type, heating element. It is complete with a built in thermostat which is set at the factory to maintain a soap tank temperature of approximately 110° to 120°. The thermostat may be adjusted by removing the center screw which holds the terminal cover on to the heater assembly. The thermostat adjustment screw is then accessible and can be adjusted as needed.

Set the slotted shaft on the thermostat so that the slot points to the desired water temperature. Re-install the terminal cover. CAUTION: Shut off electrical current to the entire system before attempting to adjust thermostat.

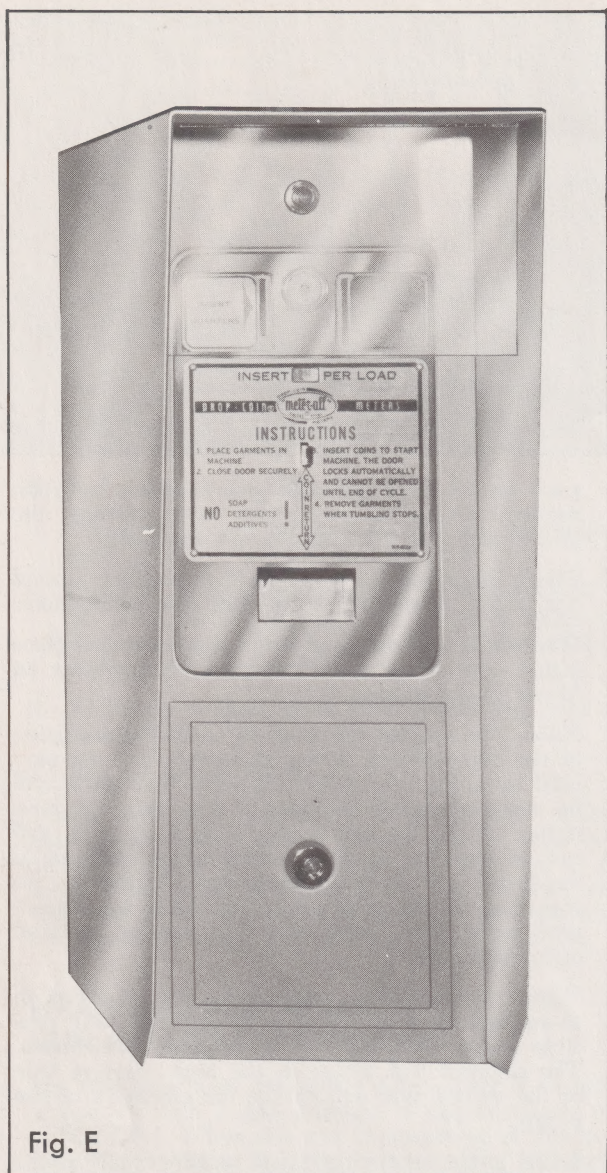


Fig. E

PARTS, INSTRUCTIONS, REPAIR AND MAINTENANCE FOR PANEL COIN MECHANISM AND VAULT USED ON MODEL 504 COIN-OPERATED CAR WASH.

This precision-built, carefully engineered and designed coin mechanism used in this unit utilizes a world renowned slug rejector which sizes, weighs, checks alloy content, checks for washers and steel slugs, etc. It offers the most complete protection against cheating ever devised!

As each coin leaves the rejector, it operates a coin switch which sends an electrical impulse to the coin accumulator or the time accumulator. If the coin deposited does not meet the standards and qualifications set up by the rejector mechanism (denomination, size, weight, alloy, etc.) the coin is returned in the coin return cup. In the case of bent coins, slugs or coins of the wrong denomination that hang in the mechanism, there is *No Jamming, No Repairs, No Service Calls!* a coin return plunger releases the mechanism, allowing such coins to be returned in the coin return cup.

COIN MECHANISM

The correct coin, nickel, dime or quarter, as stated on your order will go through the rejector ACCEPT channel, pass through the coin switch chute, "operate" and "release" the coin switch and enter the coin vault.

Items other than a quarter, dime, or nickel will follow through REJECT channels and fall into the coin-return.

Should it hang in the mechanism, pressing the coin-return button will clear the rejector and permit the coin to fall into the coin return cup.

NOTE: The rejector must be relatively level to function properly. CAUTION: Never oil the rejector.

IMPORTANT!

If it is desired to change from one coin denomination to another (example, nickel to dime, or dime to quarter), it is necessary to change the slug rejector, coin switch, and instruction plate.

COIN SWITCH

The coin passing through the switch coin chute hits the coin-switch wire arm and "closes" and "opens" the switch. This electrical impulse energizes and de-energizes the timer or accumulator solenoid. *Important:* Note load handling capacity - 5 amps, 250 V. AC.

VOLTAGES: 115/250 V., 60-Cycle.

The coin switch is very delicate as it must operate on the weight of a light-weight coin. If the switch fails to "close" or "open" check for the correct: 1. Switch arm caught on switch coin chute. 2. Coin hung-up in the switch coin chute. 3. Switch coin chute not properly lined up with accept exit of rejector. 4. Defective switch.

CAUTION: Never oil coin switch.

TROUBLE CHART

CONDITION	POSSIBLE CAUSE
ACCEPTS COINS BUT DOES NOT "START" UNIT	Coin switch inoperative Coin switch chute not properly aligned with rejector accept exit. Bent coin switch wire arm Coin hung in switch coin chute Foreign matter in rejector Accumulator timer inoperative Loose wire connections
REJECTS COINS	Rejector not level Coin-return plunger or operating lever on rejector not all the way up Rejector dirty Foreign matter in rejector Steel particles on rejector magnet Refer to National Rejectors' service information instructions.

IMPORTANT: Refer to separate service instructions for rejector servicing and parts list. We suggest sending rejectors to the rejector manufacturer for repairs, or if they are defective. Their repair center locations are indicated on the service instructions.

CAUTION: Never oil the rejector.

ACCUMULATOR TIMER

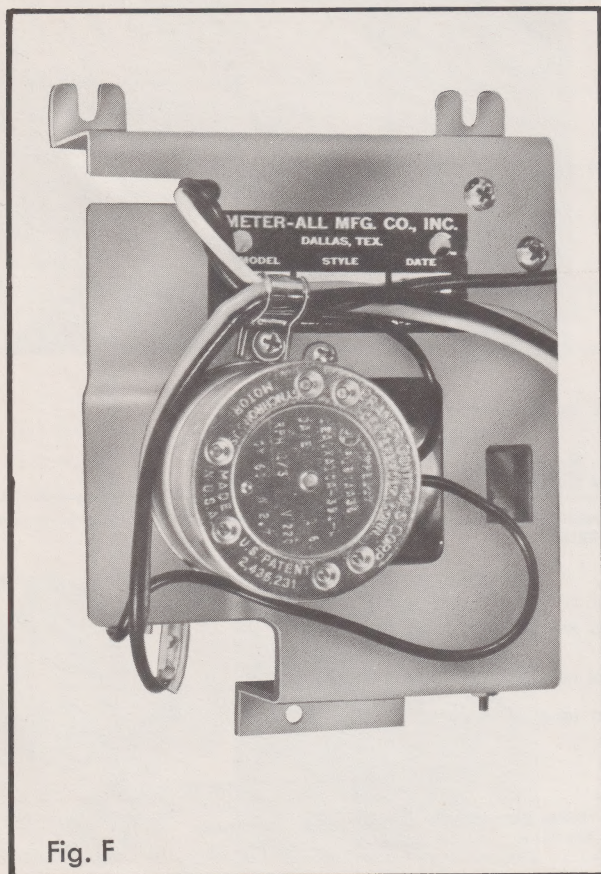


Fig. F

MODEL 329 ACCUMULATOR TIMER — 230V 5 MINUTES — PART No. 329-2011

ACCUMULATOR-TIMER

The #329 timer is a fully automatic accumulator timer which is actuated by a coin switch located directly below the slug rejector. It is a stepping type time accumulator mechanism. Each coin inserted in the coin meter sends an electrical impulse to the stepping solenoid. After each impulse the solenoid will release and the slide-bar spring causes the slide bar to return to its normal position. In so doing it advances the ratchet wheel one tooth. When the switch actuator is resting part way up the rise of one of the cam wheel notches, the switch is in the normally "off" position. When the electrical impulse from the coin switch causes the cam wheel to move, the switch actuator drops all the way to the bottom of the next notch. This releases the micro switch actuator causing the switch to close, starting the unit and the timer clock. Each coin inserted and the corresponding electrical impulse to the solenoid causes the ratchet wheel to advance one more notch.

The mechanism accumulates time for each step or tooth which the cam wheel advances. The length of time in minutes per step is controlled by the speed of the timer motor. The motor speed and operating voltage is stamped on the back of the motor. When ordering a complete timer mechanism or a replacement motor, furnish the voltage, cycle, motor speed and minutes of operation per coin or step desired.

The standard equipment shipped from the factory on this unit is a 1/3 RPH, 5-minute per coin, timer motor.

The number of minutes of operation per step or coin inserted in the coin meter can be changed from a minimum of 2.5 minutes and up by changing the timer motor. For example, with the 1/3 RPH motor, one coin will operate 5 minutes, two coins 10 minutes, etc.

With the 1/6 RPH motor, one coin will operate 10 minutes, two coins 20 minutes, etc.

REPAIR AND MAINTENANCE

The 329 coin accumulator is a relatively simple mechanism which can be serviced by any qualified serviceman. The component parts of the accumulator may be replaced in the event of damage or failure. Care must be exercised in the replacement of any of these parts as adjustments are critical and must be correct if the accumulator is to function properly.

REPLACEMENT PARTS

Meter Panel only — Chrome	304-8043
Meter Panel Instruction Plate	304-8076
Instruction Plate Drive Screws	999-9508
Slug Rejector — 25¢	302-8006
Coin Switch 25¢	325-8066
Meter Panel Lock & Key	304-8018
Blocking Magnet 230V	304-8005
Pilot Light 230V	302-8053
Timer Assy. 5 Min. 230V	329-2011
Fuse holder, only	329-8014
Fuse, 1/16 Amp., 230V	328-8038
Ratchet Solenoid, 230V	328-8022
Ratchet Spring Blade	325-8009
Ratchet Wheel	325-8007
Ratchet Hub Assembly	325-8005
Slide Bar Return Spring	325-8012
Micro Switch, V3-1-D8	323-8002
Switch Actuator, JV-58 Roller Type	323-8003
Slide Bar	325-8011
Bolt, slide bar return spring	325-8013
4-40 Hex nut (2)	999-8000
#4 Tooth Lockwasher	999-8008
"E" Type Retainer Ring	325-8010

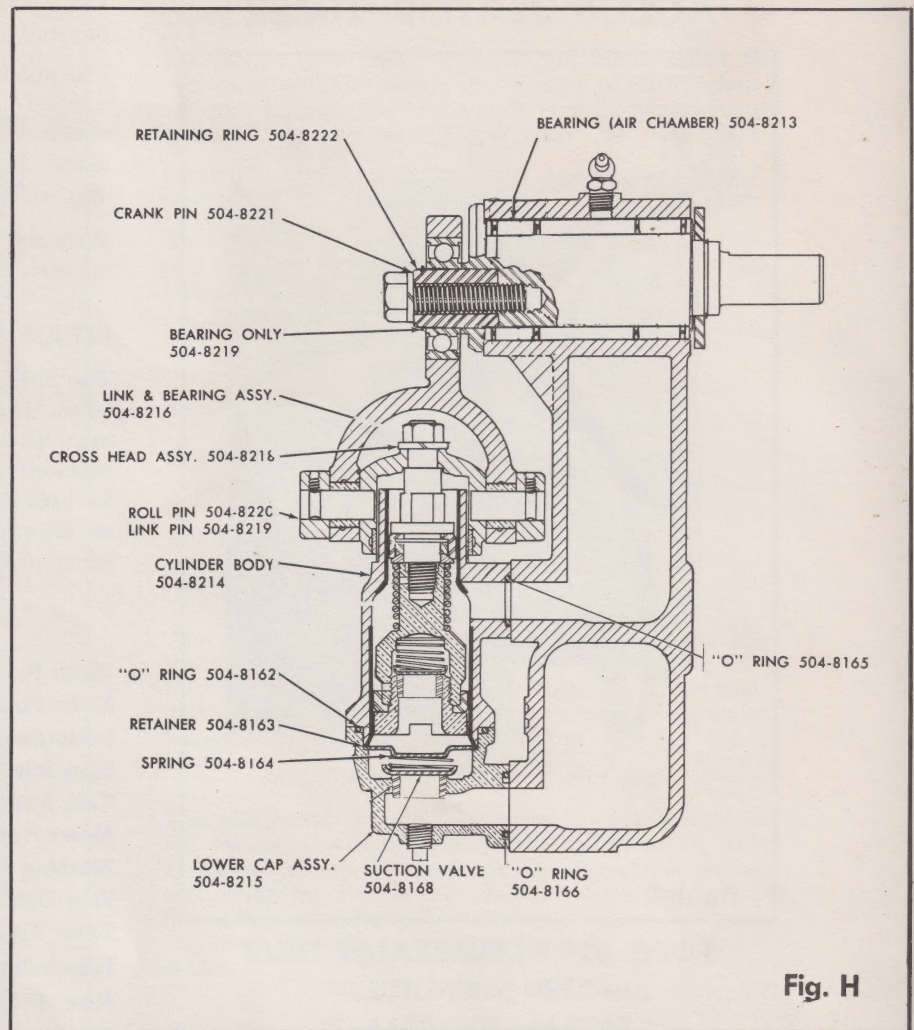
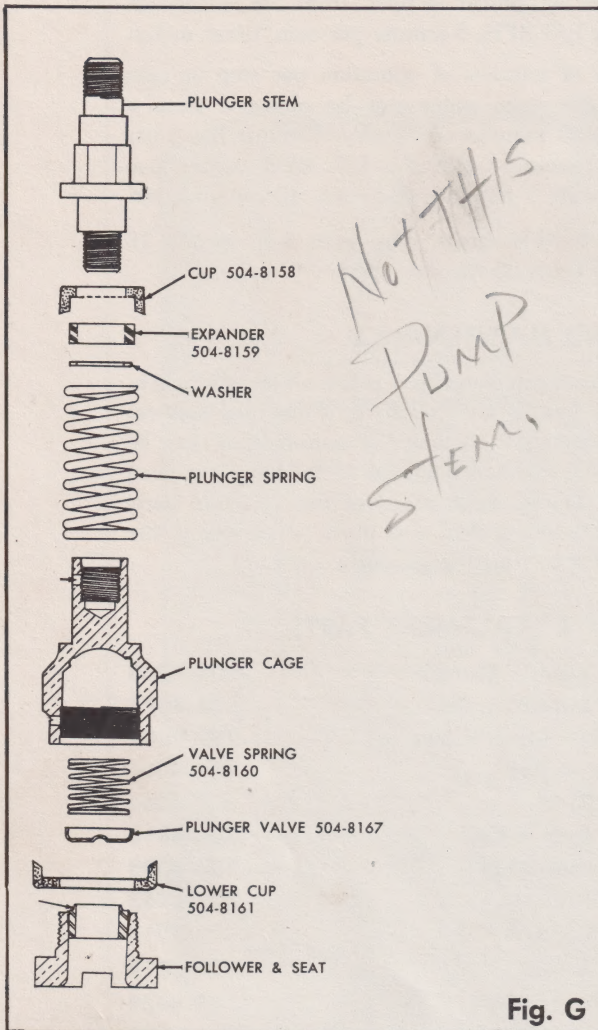
TIMER MOTORS ONLY — 230V-60Cy.

2.5 Minutes per coin, 2/3-RPH	321-8012
3.3 Minutes per coin, 1/2-RPH	321-8047
5.0 Minutes per coin, 1/3-RPH	321-8015
7.5 Minutes per coin, 2/9-RPH	325-8046
10.0 Minutes per coin, 1/6-RPH	321-8018

SPECIAL TIMER MOTORS, 230V-50Cy.

2.5 Minutes per coin, 2/3-RPH	321-8041
5.0 Minutes per coin, 1/3-RPH	325-8070

PRESSURE PUMP SERVICE, INSTRUCTIONS & PARTS



BEFORE STARTING:

- (1) Read all instructions carefully.
- (2) Lubricate the pump crankshaft bearing with a grease gun at the grease fitting on top of the main bearing housing.
- (3) Inspect interior of tank to make sure it is clean and no foreign materials are present.

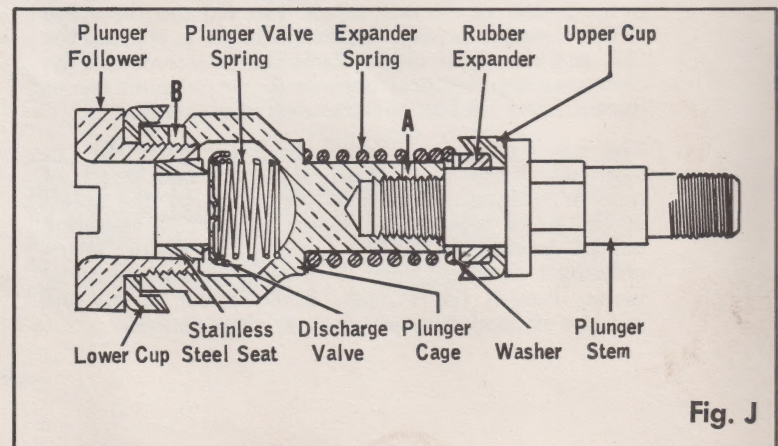
LOSS OF PRESSURE MAY BE CAUSED BY ONE OR MORE OF THE FOLLOWING:

- (1) Worn nozzle allowing greater discharge than capacity of pump.
- (2) Air leak in suction line.
- (3) Clogged suction line.
- (4) Relief valve worn, dirty or improperly adjusted.
- (6) Worn plunger packing.
- (5) Pump valves worn or sticking from dirt or foreign material.
- (7) Pump running too slow. See operating specifications for proper pump speed.

SERVICE INSTRUCTIONS:

(1) TO REPLACE CUPS ON UPPER AND LOWER PLUNGERS:

- a. Remove the four bolts which hold the cylinder and lower cap to main casting.
- b. Remove the nut at top of plunger stem. (See Fig. No. "H"). Then remove the lower cap from the cylinder.
- c. The plunger assembly can then be withdrawn through the bottom of the cylinder.
- d. Unscrew the plunger stem from the plunger cage and the follower from the plunger cage.
- e. Replace the cups and assemble the plunger AS PER ILLUSTRATION.



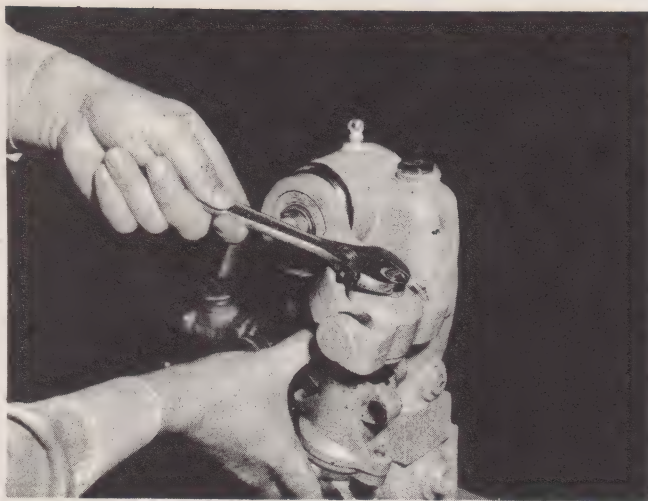


Fig. K

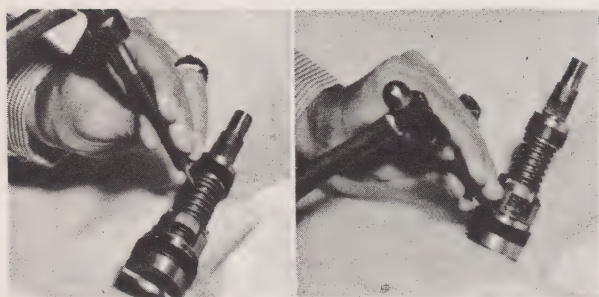


Fig. L

TO ASSEMBLE PUMP:

- a. When assembling the plunger be sure parts are installed in proper sequence. See Fig. No. "G."
- b. The upper (small) plunger should be drawn up tightly, but the lower packing follower should only be turned until it starts to tighten. Drawing this up too tight will expand the cup too much and cause cup and cylinder wear.
- c. After the plunger is properly assembled, lock the threads by "STAKING" with a small chisel through the holes "A" and "B" provided. Seat chisel in bottom of thread before staking. (See Fig. "L").
- d. Put oil or grease on both plunger cups before inserting plunger assembly in cylinder body.
- e. Clean the "O" ring seating surfaces (lower cap, suction port and discharge port). Replace "O" rings if damaged. Do not use flat gaskets since they will cause misalignment and damage the pump.
- f. When assembling pump, draw cylinder cap bolts only until they just start to tighten. Insert pump in crosshead and tighten nut which holds plunger to crosshead. Attach pump to main casting by alternately tightening the four mounting bolts. Tighten cylinder cap bolts last.
- g. Turn pump shaft by hand to make sure mechanism is free.

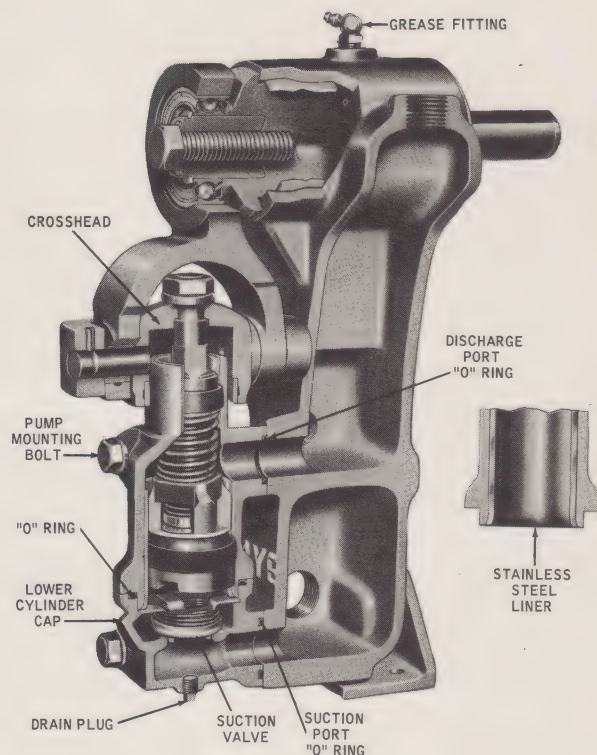


Fig. M

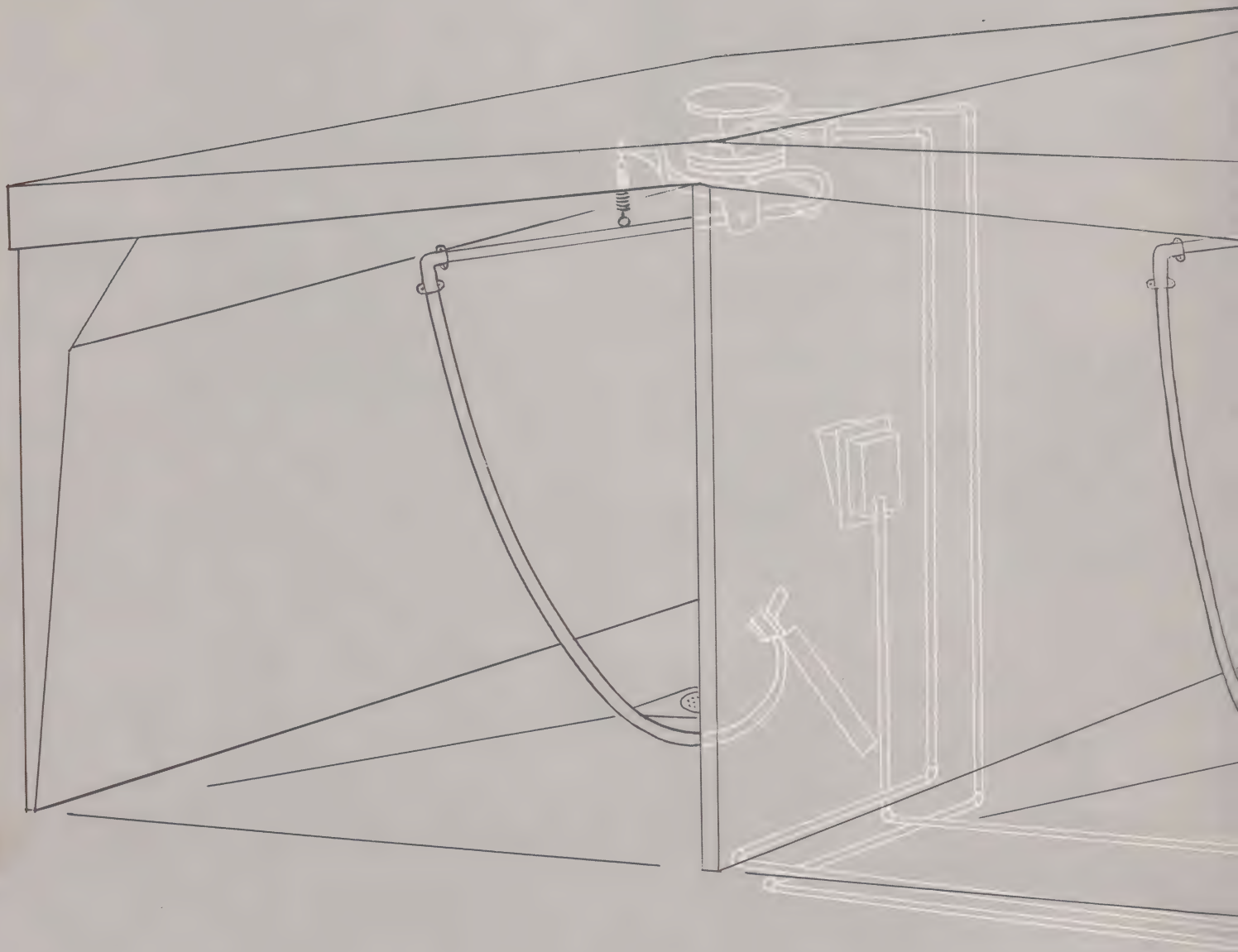
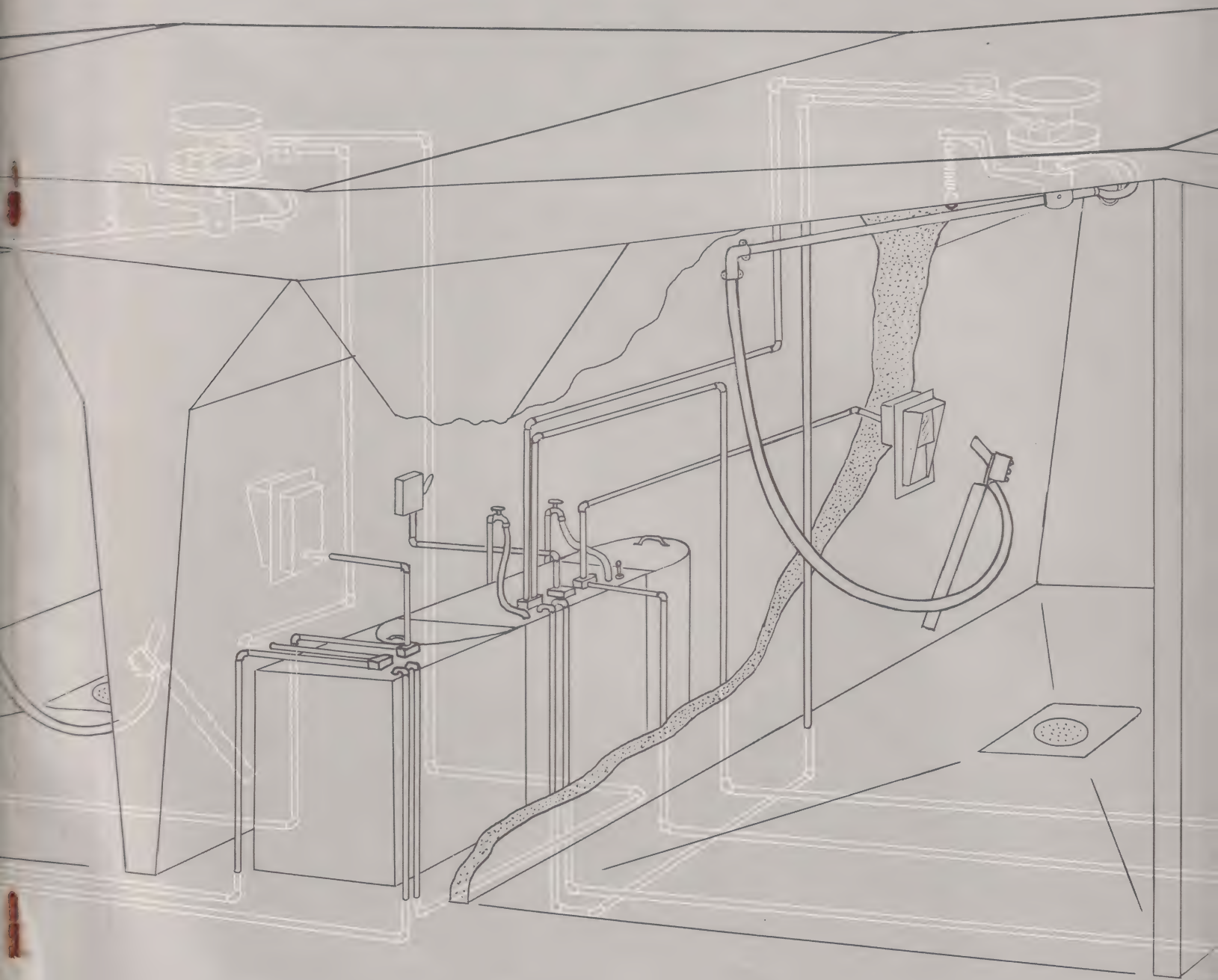
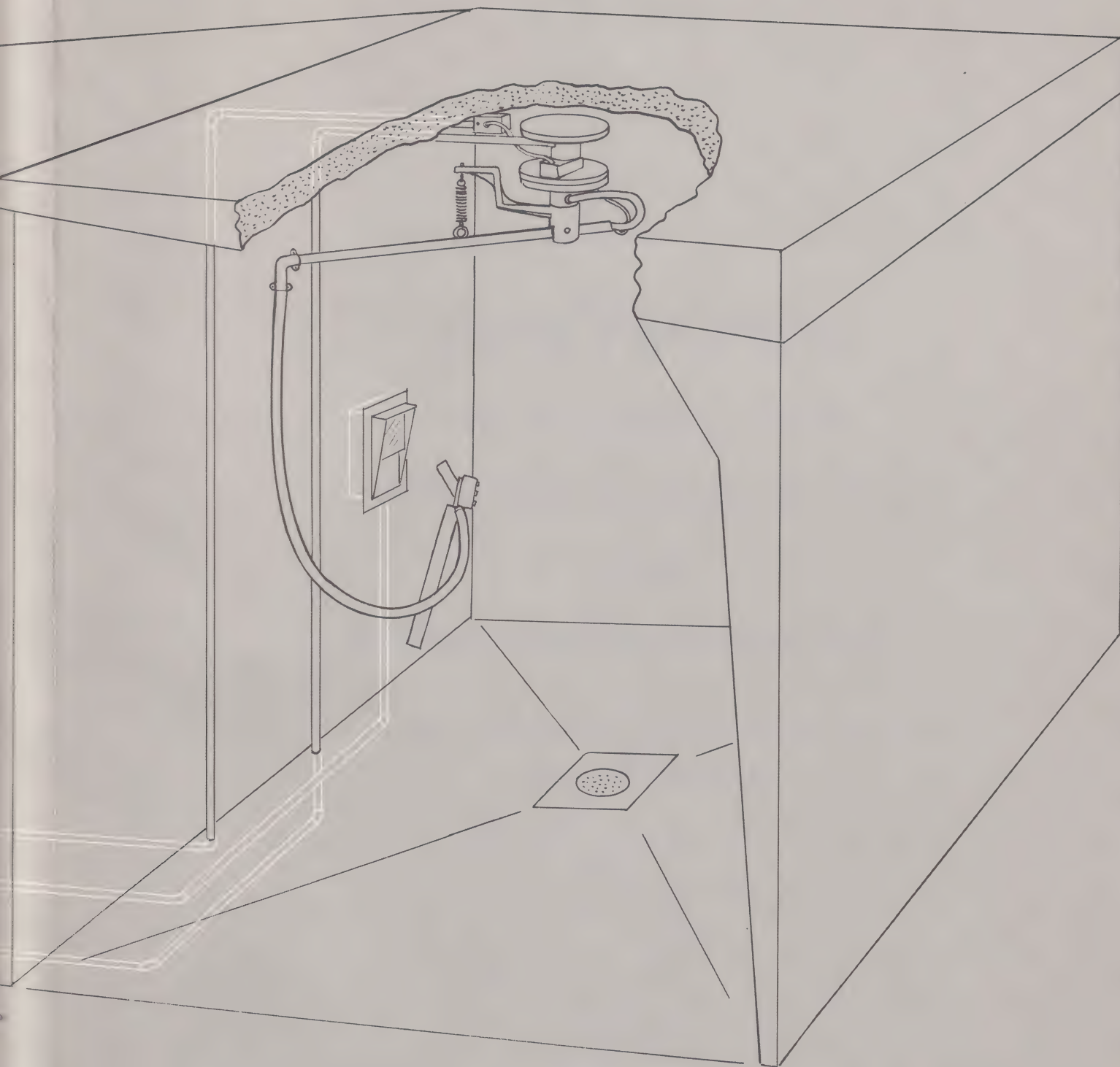


Fig. N

CAR WASH

Typical 4-Stall Installation



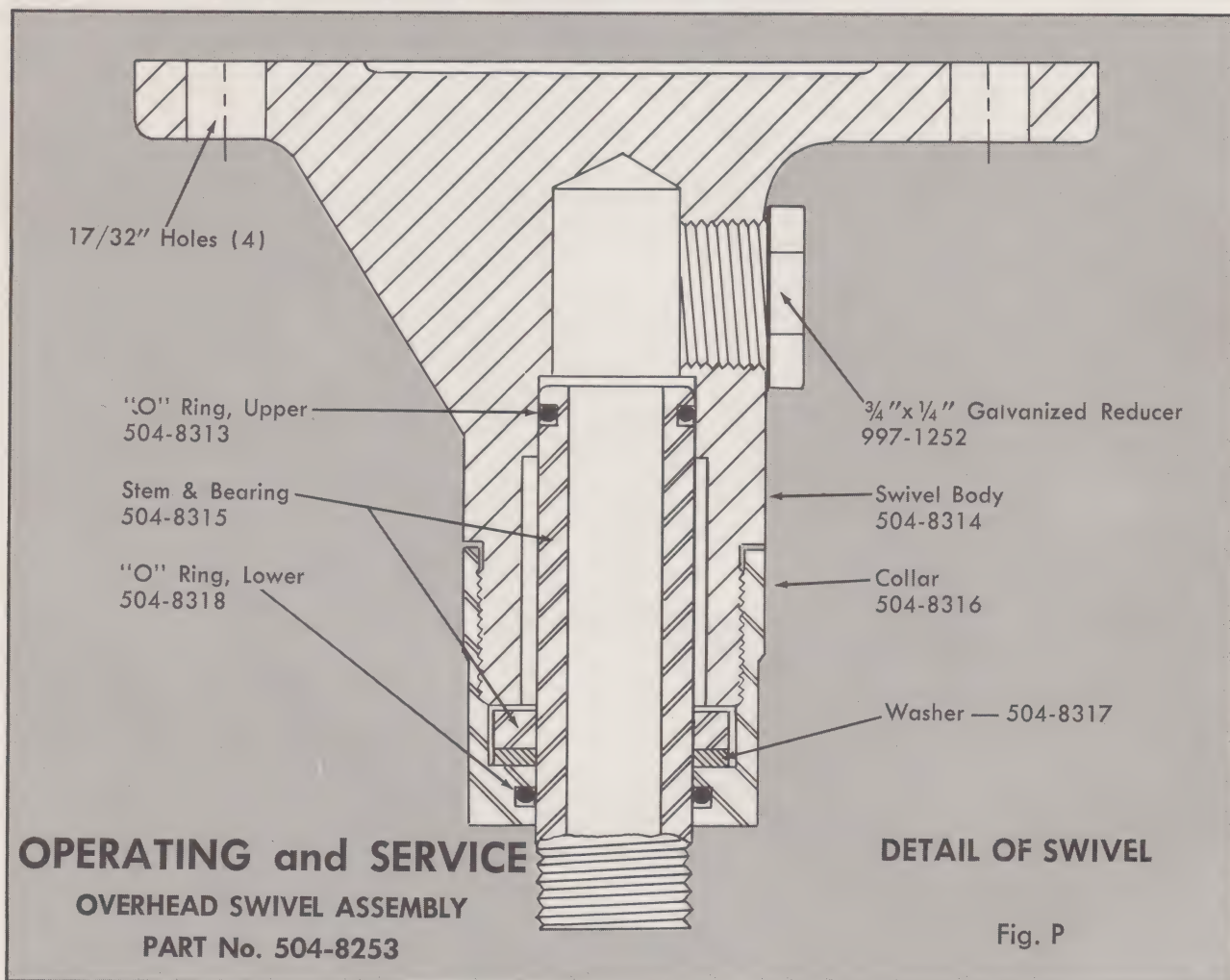
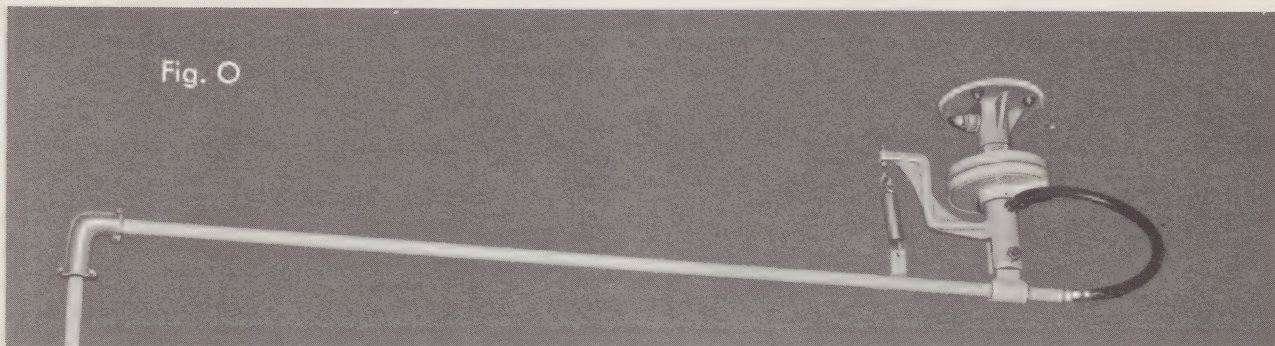


IMPORTANT

**WHEN ORDERING PARTS,
BE SURE TO ORDER BY PART NUMBER
AND
GIVE MODEL AND SERIAL NUMBER.**

*This will expedite handling and eliminate delay in
furnishing correct parts.*

Fig. O



The swivel overhead boom assembly is mounted by the use of four bolts to the boom mounting plate which in turn must be firmly attached to the ceiling of the stall.

When properly mounted in the center of the stall, the boom will rotate 360°. A $\frac{3}{4}$ " galvanized pipe is used to connect the boom assembly to the car wash unit. All pipe fittings in this line must be tight as even the smallest leak at a connection will affect the operation of the unit. It will reduce the gun pressure, and result in a poor wash job. The control wires from the swivel base must be connected by the use of a three wire #18 cable to the control panel on the unit. Care must be taken in making these connections as a loose connection will cause erratic operation of the controls and the pump motor. These controls operate on a 24 volt

circuit and undersized wiring or loose connections will result in a voltage drop to the controls and unsatisfactory operation. All connections to the brushes and the collector rings in the swivel contactor plates must be clean and tight. These plates can be removed for cleaning and service if necessary. The water seal in the swivel assy. is maintained by the use of two "O" rings which seal between the stem pipe and the swivel body.

In a matter of minutes a swivel that has given years of hard service can be easily and cheaply renewed by replacing only the "O" ring seals. This can be done without taking down the swivel housing. Merely back off large hex nut cap with wrench and swivel pulls out and seals are exposed. Replace seals and retighten.

360° CEILING MOUNTED BOOM ASSEMBLY

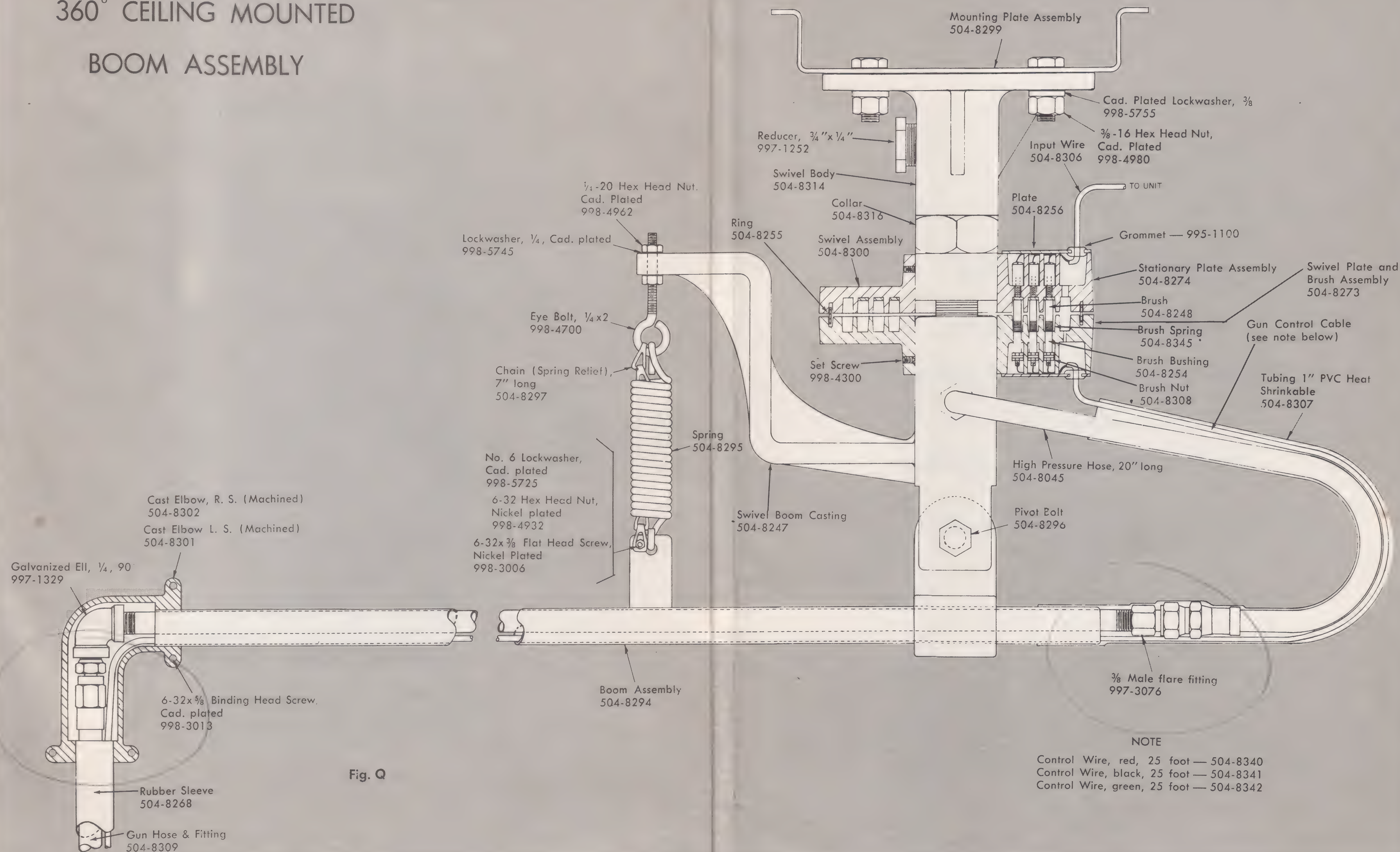


Fig. Q

IMPORTANT

**WHEN ORDERING PARTS,
BE SURE TO ORDER BY PART NUMBER
AND
GIVE MODEL AND SERIAL NUMBER.**

*This will expedite handling and eliminate delay in
furnishing correct parts.*

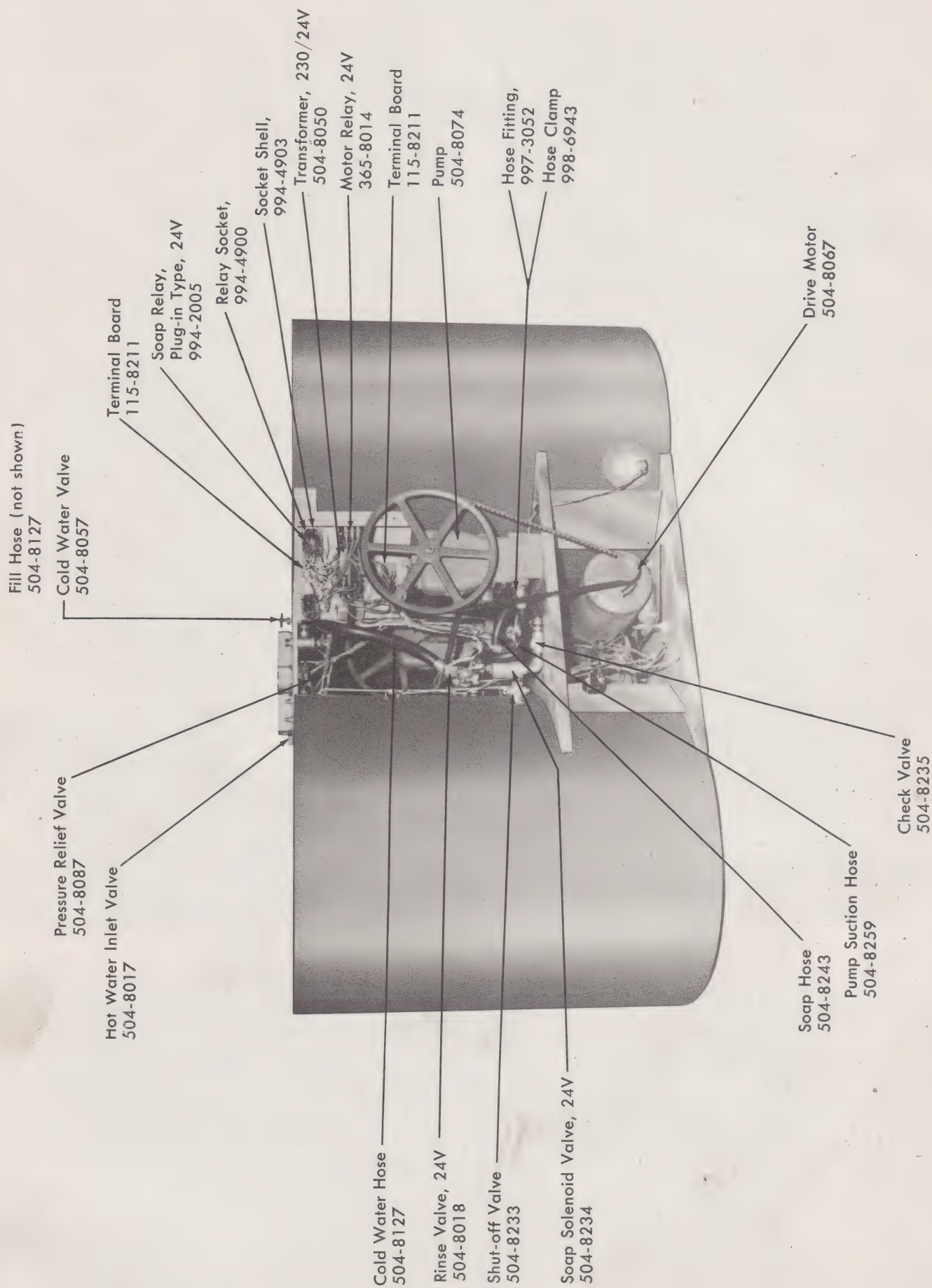


Fig. R

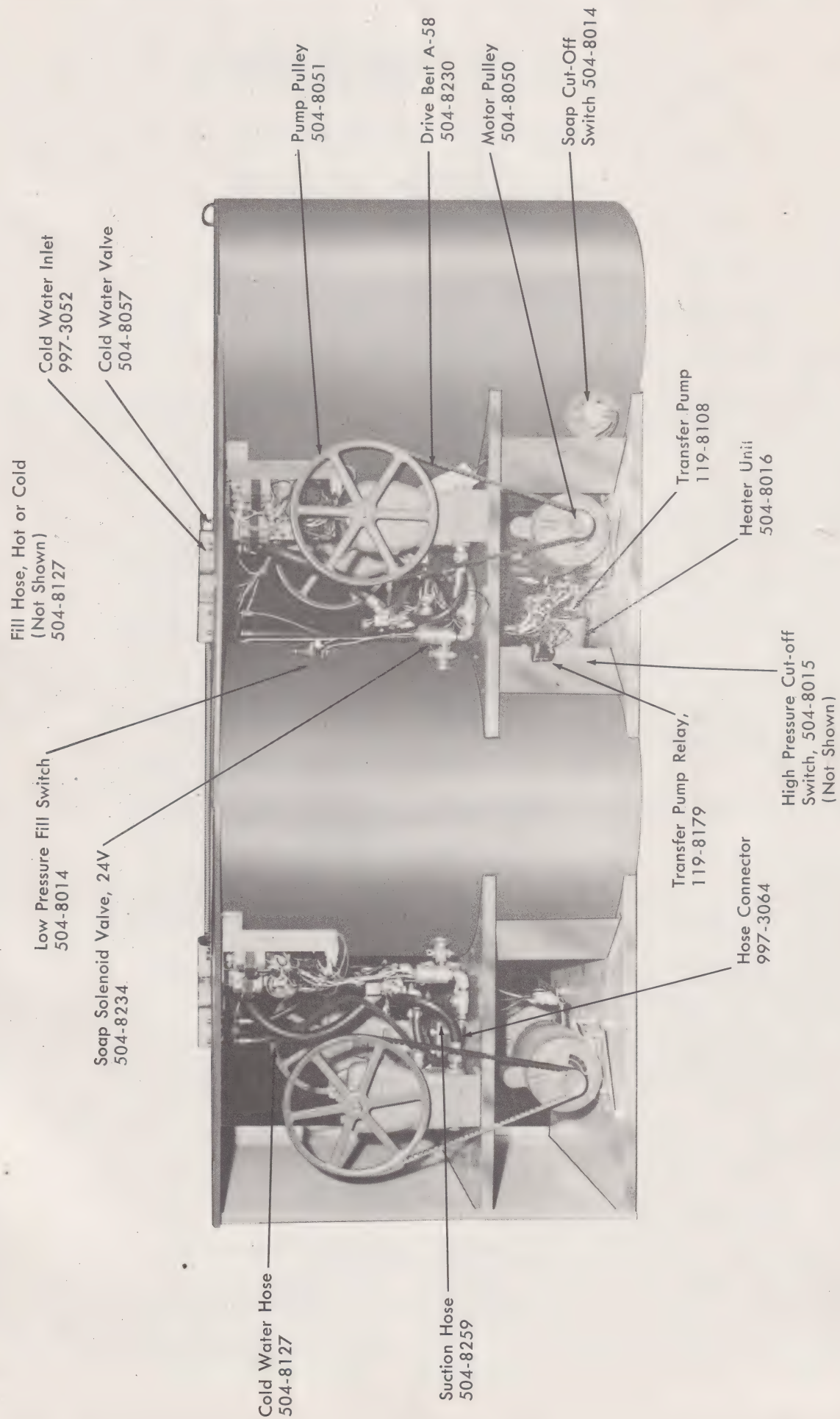


Fig. S

CAR WASH

MODEL 504-2000

PARTS LIST

DESCRIPTION OF PART

PART NO.

ELECTRICAL CONTROLS

Fuse — 10 Amp Slow-Blow	995-1898
Meter Panel Fuse — Slow-Blow 1/10 Amp	328-8037
Fuse Block	995-1897
Transformer 230/24 Volt	504-8050
Magnetic Relay 24 Volt (R6AB-1)	365-8010
Rinse Solenoid Valve 24 Volt	504-8018
Solenoid Coil (Rinse) 24V	504-8175
Soap Valve — 24V	504-8234
Solenoid Coil (Soap) 24V	504-8237
Hot Water Solenoid Valve 230 Volt	504-8017
Solenoid Coil — 240 Volts	119-8239
Low Pressure (Fill or Soap Level Cut Off) Switch	504-8014
High Pressure (Water Level Cut Off) Switch	504-8015
Soap/Rinse Relay 24V — (open type)	994-2003
Soap/Rinse Relay 24V — (plug-in-type)	994-2005
Relay Socket	994-4900
Socket Shell	994-4903
Heater Unit — 230V — 1500W	504-8016
Transfer Pump 230V	119-8108
Pump Relay (91252-418)	119-8179
Impeller & Seal Assy.	120-8076
Pressure Pump Drive Motor 115/230V	504-8067
Motor Pulley	504-8052

PRESSURE PUMP — DRIVE & CONNECTIONS

Pressure Pump	504-8074
Pump Maintenance Kit	504-8170
Pump Pulley	504-8051
Drive Belt (A-58)	504-8230
Pump Suction Hose	504-8259
Suction Hose Fitting	997-3052
Hose Clamp	998-6943
Soap Mix Adjusting Valve	504-8157
Pump High Pressure Hose 30"	504-8044
Pump High Pressure Hose 20"	504-8045
High Pressure Hose 48"	504-8128
High Pressure Relief Valve	504-8087
Cold Water Inlet Connection	997-3052
Cold Water Valve (Manual)	504-8057
Water Supply Hose	504-8127
Soap Hose	504-8243
Hose Connector	997-3064
Check Valve 3/4"	504-8235
Shut-off Valve 3/4"	504-8233

SPRAY GUN, HOSE & CABLES

Gun & Cable Assy. (less hose)	504-8105
Gun Hose 23'	504-8197
Coupling Kit & Spring Assy.	504-8203
Coupling only	997-3280
Union only	997-3265
Spring only	504-8204
Gun barrel & spray tip	504-8174
Spray tip	504-9007

DESCRIPTION OF PART

PART NO.

Gun Control Switch	504-9009
Control switch button (black)	504-9017
Control switch button (red)	504-9018
Gun Control Cable	504-8209

SWIVEL BOOM & HOSE ASSEMBLY

Special parts used only with the Swivel Boom.

Gun Hose — 12'	504-8309
Rubber Sleeve — 12'	504-8268
Control Cable — 3 wire	504-8325
(Used on first production)	
Control Wire — Red — 25 Ft.	504-8340
Control Wire — Black — 25 Ft.	504-8341
Control Wire — Green — 25 Ft.	504-8342
(used on current production)	
Mounting Plate Assembly	504-8299
Cad. Plated Lockwasher, 3/8"	998-5755
3/16 Hex Head Nut, Cad. Plated	998-4980
Swivel Assembly	504-8300
Boom Assembly	504-8294
Pivot Bolt	504-8296
Eye Bolt, 1/2x2	998-4700
3/4-20 Hex Head Nut, Cad. Plated	998-4962
Spring	504-8295
Chain (Spring Relief), 7" long	504-8297
6-32x3/8 Flat Head Screw, Nickel Plated	998-3006
6-32 Hex Head Nut, nickel plated	998-4932
No. 6 Lockwasher, Cad. plated	998-5725
High Pressure Hose, 20" long	504-8045
3/4 Male flare fitting	997-3076
Galvanized Ell 1/2, 90°	997-1329
Gun Assembly, Complete	504-8106
Cast Elbow, L. S. (Machined)	504-8301
Cast Elbow, R. S. (Machined)	504-8302
6-32x3/8 Binding Head Screw, Cad. plated	998-3013
Tubing 1" PVC Heat Shrinkable	504-8307
Lockwasher, 3/8, Cad. plated	998-5745
Input Wire	504-8306
Gun Hose & Fitting	504-8309
Rubber Sleeve	504-8268
Swivel Boom Casting	504-8247
Reducer, 3/4"x1/2"	997-1252
Stem & Bearing	504-8315
Swivel Body	504-8314
Upper "O" Ring	504-8313
Lower "O" Ring	504-8318
Collar	504-8316
Ring	504-8255
Set Screw	998-4300
Plate	504-8256
Grommet	995-1100
Stationary Plate Assembly	504-8274
Brush	504-8248
Brush Spring	504-8345
Brush Bushing	504-8254
Swivel Plate and Brush Assembly	504-8273
Brush Nut	504-8308
Gun hose assembly (includes hose, control wire and sleeve)	504-8364

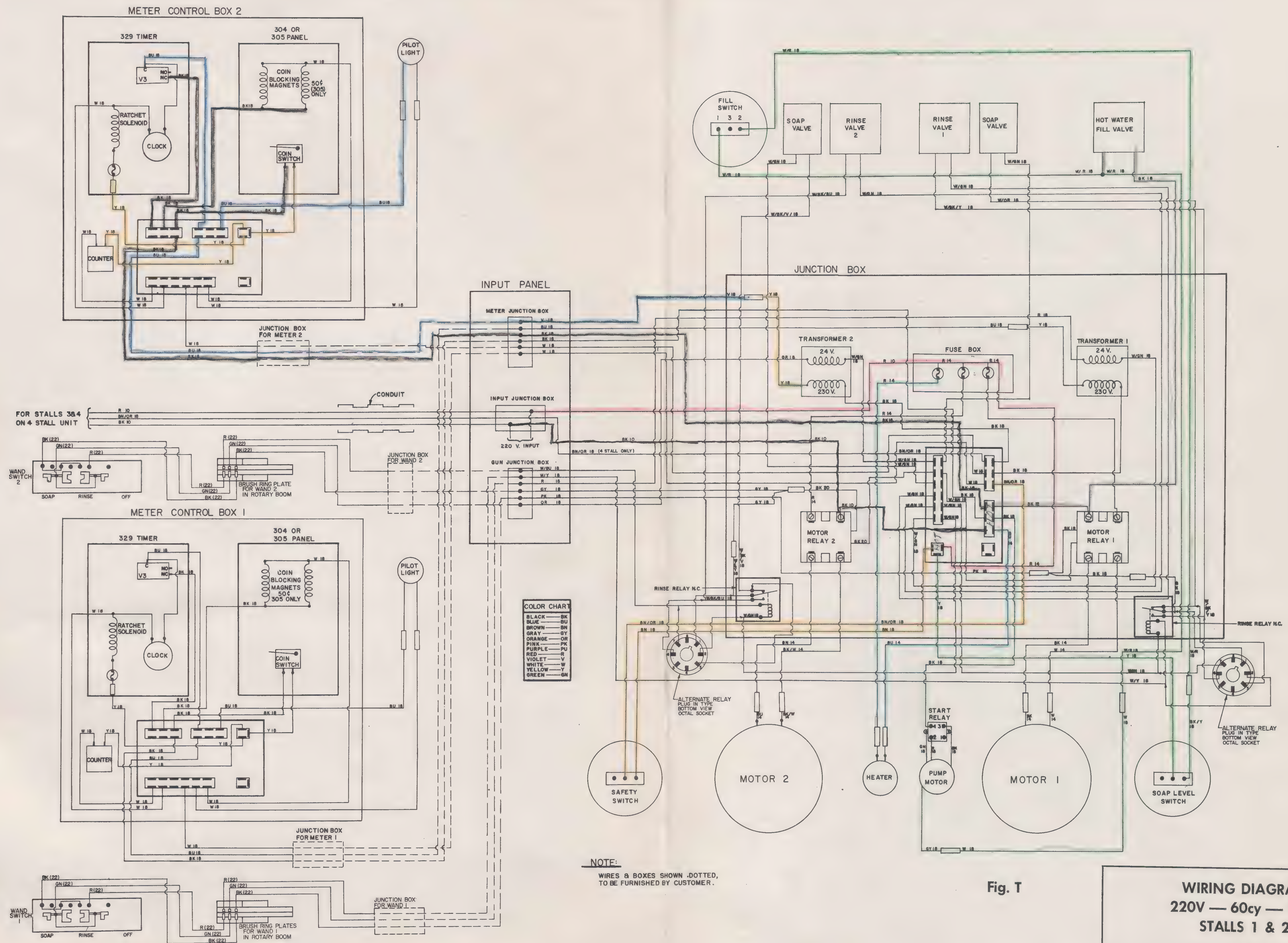


Fig. T

WIRING DIAGRAM
220V — 60cy — 1-PH
STALLS 1 & 2

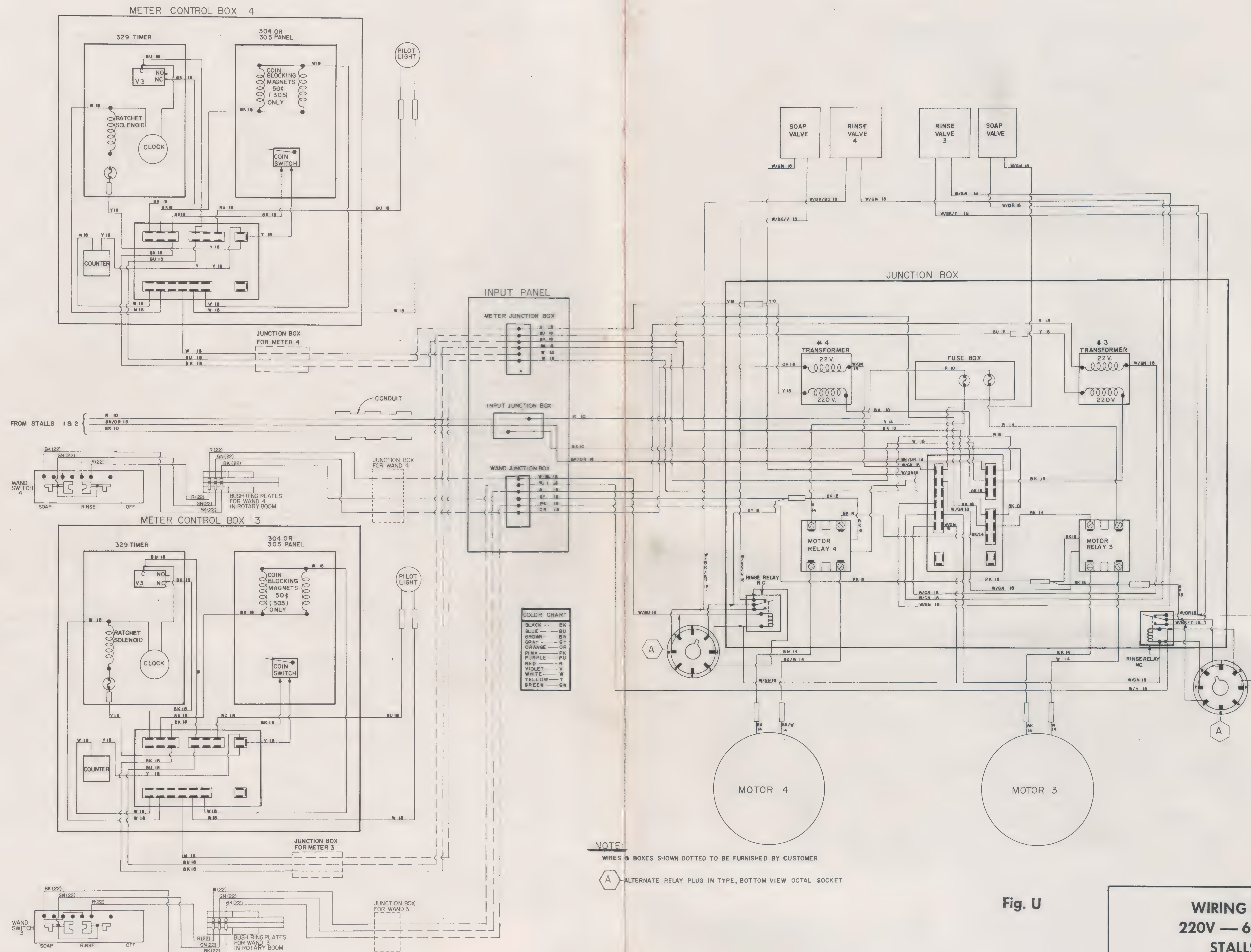


Fig. U

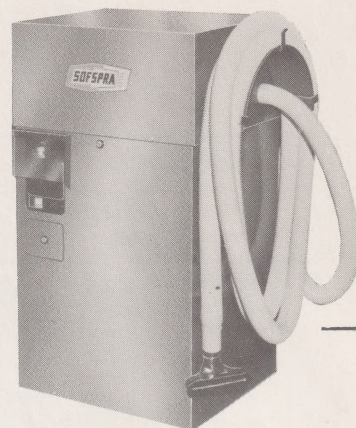
WIRING DIAGRAM
220V — 60cy — 1-PH
STALLS 3 & 4

TROUBLE CHART

CONDITION	POSSIBLE CAUSE
A. Unit will not start—No Current to unit.	1. Electrical power turned off at main switch panel. 2. Blown Fuse or open circuit breaker.
B. Unit will not start—Current to unit. Erratic operation unit cuts out.	1. Gun control cable damaged or broken at Gun or Boom. 2. Gun control switch damaged or broken. 3. Soap level too low—Safety switch open. 4. Soap safety switch improperly adjusted. 5. Motor relay inoperative 6. 24 Volt control transformer open or burned out. 7. Loose or broken wires in electrical system. 8. Inoperative accumulator timer. (Check fuse in ratchet solenoid circuit) 9. Inoperative or damaged coin switch. 10. Ratchet solenoid open. 11. Micro switch in timer broken or out of adjustment.
C. Drive Motor runs—Low or no pressure at Gun—Soap or Rinse.	1. Drive belt loose or broken. 2. Spray tip plugged. 3. Broken or damaged high pressure hose. 4. Broken or damaged suction hose. 5. Pressure relief valve leaking—out of adjustment. 6. Inoperative rinse relay. 7. Pressure pump not developing full pressure. (See instructions on pump maintenance)
D. Drive Motor runs—Pressure on soap only	1. Broken wire (Red lead) in control cable. 2. Broken or damaged rinse control switch. 3. Inoperative rinse relay. 4. Inoperative rinse valve. 5. Cold water supply shut off. 6. Plugged screen in rinse solenoid valve.
E. Drive Motor runs—Pressure on rinse only	1. Rinse relay contacts not making connection during soap period. 2. Inoperative soap solenoid valve. 3. Soap level too low—inoperative or improperly adjusted soap level safety switch.
F. Low pressure on soap—Pump knocks during soap period.	1. Air leaks in fittings at soap valve. 2. Air leaks in hose or fittings at check valve or "T" connection. 3. Air leak in suction hose.
G. Low Pressure on rinse—Pump knocks.	1. Undersized water supply line to the unit. 2. Air leaks at suction hose. 3. Dirty or restricted screen in rinse valve. 4. Low city water pressure.
H. Air lock between soap and rinse.	1. Air leaks at check valve or soap valve. 2. Low voltage at soap solenoid coil.
I. Pressure O.K.—Low or cold soap temperature	1. Thermostat on heating element set too low. Adjust to 110° to 120°. 2. Thermostat inoperative. 3. Heating element burned out. 4. Loose or broken connection on thermostat or element. 5. Auxiliary water heater out—Cold water being furnished to hot water connection. 6. Auxiliary heater thermostat set too low. 7. Recovery capacity of auxiliary heater not adequate for volume of hot water being used.
J. Poor wash job	1. Low gun pressure—See—causes listed under "C". 2. Soap temperature low or cold. 3. Incorrect soap mixture—(adjust metering valve)
K. Weak soap mixture	1. Transfer pump inoperative. 2. Soap level switch inoperative. 3. Soap level switch out of adjustment. 4. Metering valve plugged or closed.
L. Discharge from Pressure Relief Valve	1. Check spray tip in gun for dirt or foreign material. Clean if needed. 2. Check pressure relief valve for dirt or foreign material. Remove, disassemble, clean, reinstall and adjust.



COIN OPERATED VACUUM CLEANER MODEL 508



PARTS LIST

ELECTRICAL COMPONENTS

DESCRIPTION	PART NO.
Coin Meter Assy. 115V.....	365-1018
Meter Panel only Chrome.....	304-8043
Slug Rejector 10¢.....	302-8005
Coin Switch 10¢.....	325-8065
Meter Panel Lock & Key.....	304-8018
Meter Panel Instruction Plate.....	304-8078
Meter Panel Drive Screw.....	999-9508
Timer Assy. 115V.....	329-1012
Pilot Light 115V.....	302-8056
Timer Fuse 1/10 A — Slow-Blow.....	328-8037
Motor & Fan Assy. — 115V.....	508-8016
Motor Relay 115V.....	365-8008

CABINET PARTS

DESCRIPTION	PART NO.
Motor Mounting Plate.....	508-8014
Motor Mounting Pad (Rubber).....	508-8018
Motor Mounting Washer (Rubber).....	998-6430
Motor Mounting Stand-Off.....	508-8019
Motor Mounting Bolt.....	998-1051
Lock Washer.....	998-5750
Nut.....	998-4971

HOSE & FITTINGS

DESCRIPTION	PART NO.
Vacuum Hose — 20'.....	506-8044
Hose Clamp.....	998-6951
Nozzle.....	506-8036
Brush.....	506-8037
Hose Support Assy.....	508-8037
Filter Bag.....	508-8040
Filter Bag Clamp.....	998-7073
Exhaust Extension Hose (Rubber).....	508-8020
Drum Suction Hose (Rubber).....	508-8041
Hose Clamp.....	998-6951

DESCRIPTION	PART NO.
Meter Water Shield (Plexiglass).....	368-8031
Cabinet Top Assembly.....	508-8030
Cabinet Base Assembly.....	508-8001
Coin Vault.....	370-8007
Drum only.....	508-8039
Drum Gasket.....	119-8060
Vault Lock & Key.....	383-8172
Motor Compartment Lock & Key.....	999-9555
Lock Cam.....	999-9556

INSTRUCTIONS

The Model 508 Vacuum Cleaner is a coin operated industrial unit, specifically designed for use with a coin operated car wash installation. It is completely wired internally, and it is only necessary to connect it to a 115 volt electrical service. It should be mounted firmly on a concrete base and the electrical service brought into the base and connected at the junction box located in the lower section of the cabinet. To connect the hose and the hose support it is necessary to remove the motor compartment top. This can be done by removing the top, attach the hose support with the three bolts provided. Then insert the vacuum hose

through the upper hole in the top and connect the hose to the suction pipe with the clamp provided. Replace the top to the motor base plate and replace screws.

The vacuum drum must be emptied frequently, depending on the usage. When the filter bag becomes dirty it can be washed and reused. When the condition of the filter bag reaches the point where it affects the suction of the cleaner or will not properly filter the dust and dirt out of the cleaner unit, it should be replaced. The frequency of the replacement necessary depends upon the usage of the unit and other local conditions.

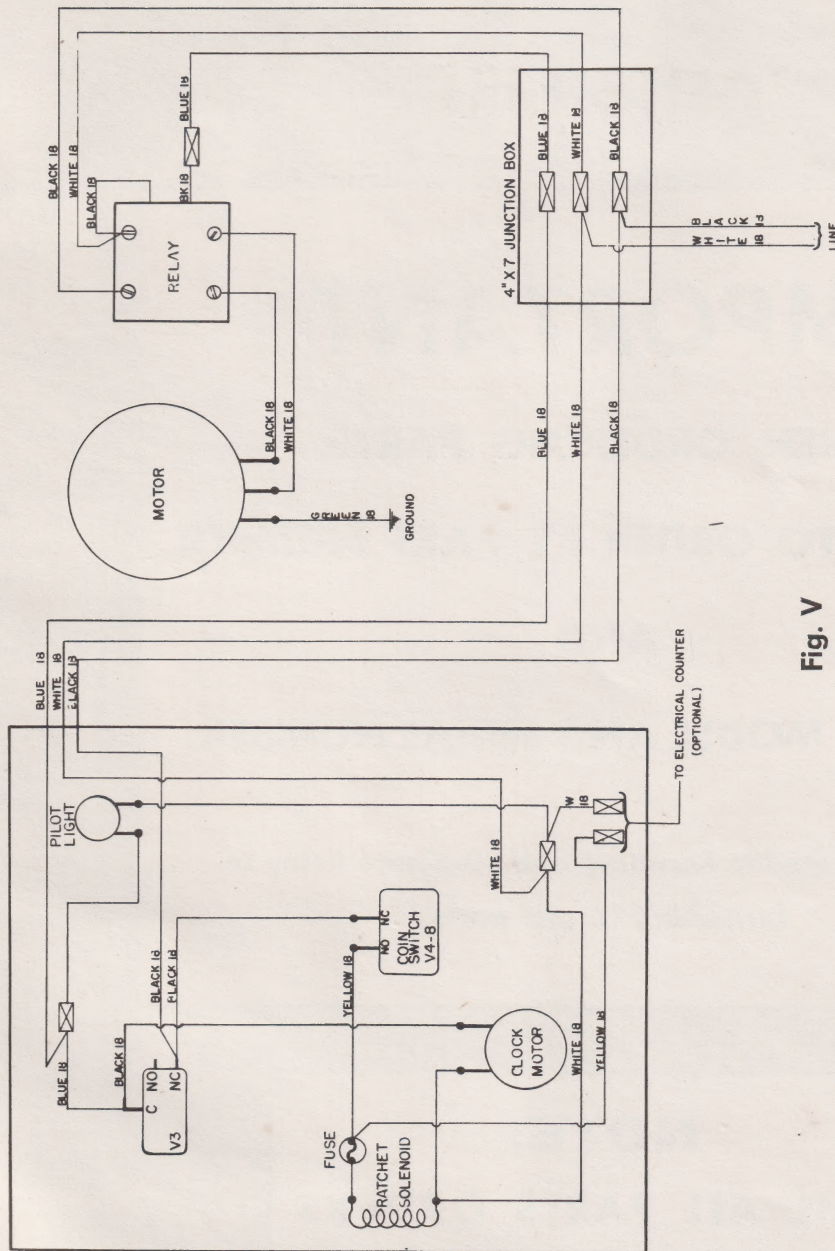


Fig. V

WIRING DIAGRAM

115V

COIN OPERATED VACUUM CLEANER

MODEL 508

INSTALLATION AND OPERATING MANUAL PARTS LIST

COIN-OP CAR WASH

504-2000 SERIES

IMPORTANT

**WHEN ORDERING PARTS,
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AND
GIVE MODEL AND SERIAL NUMBER.**

*This will expedite handling and eliminate delay in
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NOTE:

**MAIL ALL PARTS ORDERS
AND REQUESTS FOR SERVICE
DIRECT TO YOUR NEAREST
ALD DISTRICT OFFICE**